

SOME PSEUDOSCORPIONIDEA FROM AUSTRALIA, CHIEFLY FROM CAVES

By M. BEIER*

(Figures 1-4).

Summary

Miss Barbara Dew, of the University of Sydney, has collected, over recent years in various caves of New South Wales, four species of Pseudoscorpions, three of which (*Morikawia cavicola*, *Sundochernes guanophilus* and *Protochelifer cavernarum*) are here described as new. A fifth species, *Sundochernes dewae* n.sp., was taken from birds' nests in hollow trees.

Sathrochthonius tuena Chamberlin

3 ♂, 3 ♀, Southern Limestone, Jenolan Caves, N.S.W., in guano, 6. VII. 1963, B. Dew leg.; 7 ♀ from the same locality, 25. VI. 1964; 1 ♀, Basin cave, Wombeyan, N.S.W., in guano, 19. X. 1963, B. Dew leg.

This true cave-dwelling species was described by Chamberlin (1962) from an unnamed cave, perhaps in the Blue Mountains near Sydney.

Morikawia cavicola sp. nov.

(Fig. 1).

Pale yellowish brown. Carapace a little longer than broad, moderately narrowed in the basal third, sharply reticulate in the hind corners, with 18 relatively long bristles (the lateral preocular bristles only short), of which 4 are on the front border (the submedian pair rather close) and 2 on the posterior border; front border with broad, rounded, acutely dentate epistome; posterior border concave. Eyes and eye-pigment greatly reduced, very small and flat rudiments of lenses of the posterior eyes at most present. The two anterior abdominal tergites somewhat paler than the others. Tergites 1 to 4

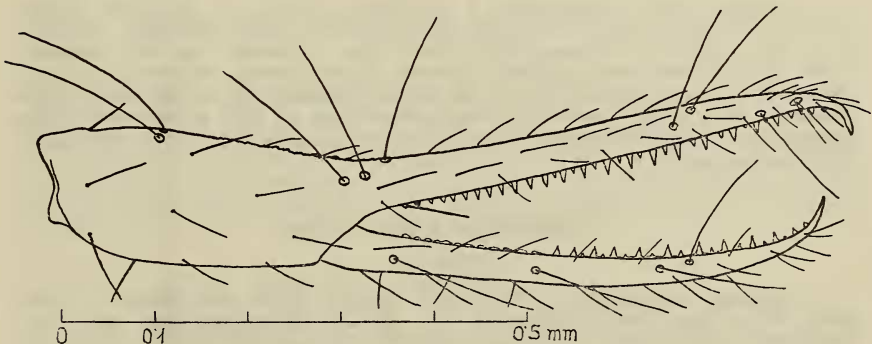


Fig. 1. *Morikawia cavicola*, nov. spec., chela of the male, lateral.

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each with 4, the following each with 6 bristles, the three bristles on each side of equal distance. 9th tergite with an unpaired median bristle. Last tergite with two long tactile bristles. Palm of chelicerae with 5 bristles. Fixed cheliceral finger with about 8 teeth, the last tooth enlarged; movable finger finely and uniformly denticulate. Spinneret hump wanting in the female also. Flagellum with 5 to 6 long pennate bristles. Palpal femur a little longer than carapace, flatly granulate laterally in the basal half. Palpal hand rather coarsely granulate dorsodistally, very narrow, twice as long as broad; chela 6.2 times longer than broad. Hand with a single moderately long and strong spike-bristle mediolaterally at the base of the fingers. Fingers 1.9 times longer than hand. Fixed finger with about 36 erect, narrow, and acute teeth of very unequal size on its whole length (the intercalary teeth scarcely half as long as the primary teeth), only the 4 distal ones and the 11 or 12 basal ones equal in length. Movable finger toothed only in its distal half with 11 long, erect, and acute teeth, and with very small, mostly grain-shaped intercalary denticles; the row of teeth ends shortly distally of the tactile seta *sb*; about 12 flat rudimentary teeth in the basal half of the movable finger. The tactile setae *ib* and *isb*, as usually, shortly proximad of the middle of the dorsum of the hand; the remaining tactile setae also in normal position. Coxae of the first pair of legs with a blunt conical protuberance without bristles. Coxae of the second pair of legs with a row of 7 finely pennate coxal spines. Intercoxal tubercle absent. Margins of the genital opening of the male smooth, with fine marginal bristles.

Body: length ♂ 1.5 mm., ♀ 1.7 mm.

Carapace: length, ♂ 0.48 mm., ♀ 0.53 mm.; breadth, ♂ 0.42 mm., ♀ 0.48 mm.

Pedipalps: length femur, ♂ 0.52 mm., ♀ 0.59 mm.; length hand, ♂ 0.30 mm.; breadth hand, ♂ 0.145 mm.; length fingers, ♂ 0.56 mm.; length chela, ♀ 0.92 mm.

Holotype ♂ and *Allotype* ♀. Bungonia, N.S.W. The Grill Cave, in guano, 6.II.1965, B. Dew leg, (S. Aust. Mus., Adelaide, No. Ar 165-6).

Paratype. 1 ♂ from the same locality (Mus. Vienna).

Comments—The new species is distinguished from all the other species of the genus by the broad, rounded, and irregularly dentate epistome. It differs from the related *M. zonata* Beier from New Caledonia and *M. grimmeti* (Chamberlin) from New Zealand moreover by the absence of eyes, the equal distance of tergal bristles of the abdominal segments 5 to 8, and by the presence of a single moderately long spike-bristle of the palpal hand. This species is the first representative of the genus in Australia. It is a true cave-dwelling animal.

Sundochernes dewae sp. nov.

(Fig. 2).

Carapace and pedipalps rather dark reddish brown, the former a little paler in its basal half. Integument very densely and rather finely granulate. Vestitural bristles very short and distinctly clavate, the lateral bristles of pedipalps only dentate. Carapace about as long as broad, with 10 posterior border bristles, without eye spots; both transverse furrows rather narrow and not very deep but distinct, the sub-basal one scarcely one third closer to the posterior border than to the anterior furrow. Abdominal tergites divided, except the ultimate, which is not or incompletely divided. The half tergites of the middle segments each with 9 posterior border bristles and 1 lateral

border bristle, without discal or median border bristles; those of the 10th segment with 4 posterior border and 2 discal bristles and with 1 lateral and 1 median border bristle; 11th tergite with 12 marginal and 4 discal bristles in all, without tactile bristles. Ultimate sternite granulate, without tactile bristles. Palm of chelicerae with 6-7 bristles, the shorter proximal ones stout and dentate. Galeal bristle short, scarcely reaching beyond the tip of the finger. Galea with very small terminal branches, which are but a little longer in female than in male. Pedipalps robust. Trochanteral humps, especially the ventral one, relatively high and prominent. Femur abruptly pedicellate, 2.3-2.4 times, tibia 2-2.1 times, longer than broad, the latter,

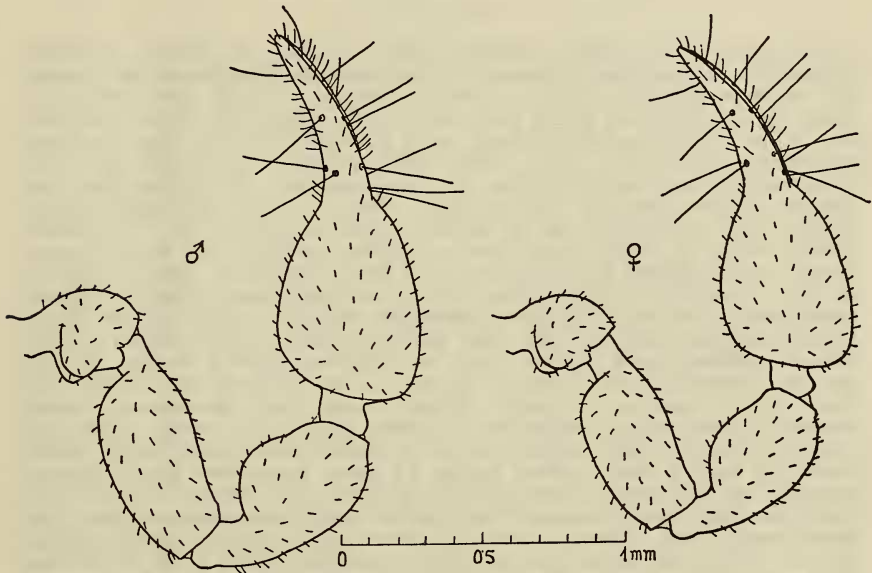


Fig. 2. *Sundochernes dewae*, nov. spec., right pedipalp of male and female.

especially in the male, very highly swollen medially; hand ovate, 1.6-1.7 times, chela with pedicel 2.9-3 times, without pedicel 2.7-2.8 times, longer than broad. Fingers nearly as long as hand without pedicel, the fixed one with about 34, the movable one with about 38 teeth; the fixed finger has laterally 7, medially 6, the movable one laterally 6, and medially 5 accessory teeth. Distribution of tactile setae as usual, *ist* scarcely distad of *est*, *it* subapically nearly opposite *et*; *st* of the movable finger but a little closer to *t* than to *sb*. Legs moderately slender, tarsus of the 4th pair without tactile bristle.

Body: length ♂, ♀, 3 mm.

Carapace: length ♂, ♀ 0.90 mm.; breadth ♂, 0.85 mm.; ♀ 0.90 mm.

Pedipalps: length femur, ♂ 0.78 mm.; ♀ 0.67 mm.; breadth femur, ♂ 0.32 mm.; ♀ 0.29 mm.; length tibia, ♂ 0.74 mm.; ♀ 0.66 mm.; breadth tibia, ♂ 0.37 mm.; ♀ 0.32 mm.; length hand, ♂ 0.82 mm.; ♀ 0.75 mm.; breadth hand, ♂ 0.50 mm.; ♀ 0.44 mm.; length fingers, ♂ 0.68 mm.; ♀ 0.63 mm.

Holotype. 1 ♂, Brewarrina, N.S.W., from nest of Galah (*Kokatoe roseicapilla*) (a native parrot) in hollow tree, June 1964, B. Dew, (Australian Museum, Sydney).

Paratypes. 1 ♂, 2 ♀, 7 nymphs from the same locality (Australian Museum, Sydney and Mus. Vienna).

Comments—This species is easily recognizable by its very clumsy pedipalps and the palpal tibia strongly convex medially.

Sundochernes guanophilus sp. nov.

(Fig. 3).

Carapace and pedipalps intensely reddish brown, the former somewhat lightened in its basal half, abdominal tergites brownish. Integument very densely and moderately finely granulate. Vestitural bristles relatively long and rather stout, the dorsal bristles of the body shorter and slightly but distinctly clavate, the bristles of the pedipalps dentate only. Carapace about as long as broad posteriorly, without eye spots, with 10-12 posterior border bristles; both transverse furrows sharply incised, the sub-basal one 1/3 farther from the anterior furrow than from the posterior border. All the abdominal tergites divided; the half tergites of the middle segments with 10 or 11 posterior border bristles, of which some have a subdiscal position, and with 2 lateral border and 1 median border bristle; 10th half tergite each with 8 posterior border, 3 discal, 2 lateral border, and 1 median border bristles; ultimate tergite with 6 border and 8 discal bristles of irregular position, without tactile bristles. Ultimate sternite finely and densely granulate, with weakly clavate bristles, without tactile bristles. Palm of chelicerae with 6 bristles, *B*, *SB*, and the accessory bristle roughly dentate. Galea of both sexes only with short apical branches. Pedipalps relatively stout. Both trochanteral humps rounded. Femur abruptly pedicellate, 2.6 times, tibia 2.2.-2.3 times, longer than broad, the latter rather strongly convex medially; hand ovate, 1.5-1.7 times, chela with stalk 3 times, without pedicel 2.8 times, longer than broad. Fingers, especially in the female, distinctly shorter than hand without pedicel, with 34-38 marginal teeth; accessory teeth rather small but numerous, the fixed finger laterally with 9, medially with 3, movable finger laterally with 7, medially with 4. Position of tactile setae as usual, *ist* scarcely distad from *est*, *it* close to *et* and a little nearer to the top of the finger than to *ist*; *st* of the movable finger closer to *t* than to *sb*. Legs rather slender; tarsus of the 4th pair without tactile bristle.

Body: length ♂, ♀ 3 mm.

Carapace: length ♂, ♀ 1 mm.; breadth ♂ 0.90 mm.; ♀ 1.05 mm.

Pedipalps: length femur, ♂ 0.88 mm.; ♀ 0.86 mm.; breadth femur, ♂ 0.34 mm.; ♀ 0.33 mm.; length tibia, ♂ 0.84 mm.; ♀ 0.83 mm.; breadth tibia, ♂ 0.38 mm.; ♀ 0.35 mm.; length hand, ♂ 0.85 mm.; ♀ 0.88 mm.; breadth hand, ♂, ♀ 0.49 mm.; length fingers, ♂ 0.66 mm.; ♀ 0.63 mm.

Holotype ♂ and *Allotype* ♀. Fig Tree cave, Wombeyan, N.S.W., in guano, 19.II.1963, B. Dew leg. (S. Austral. Museum, Adelaide, No. Ar 163-4).

Paratype. 1 ♀, from the same locality (Mus. Vienna).

Comments—Easily distinguishable from all the other species of the genus by the relatively long vestitural bristles. Closely related to *S. dewae* and very similar to this species in the shape of the stout pedipalps and in having the tibia strongly convex medially, but the ventral trochanteral hump

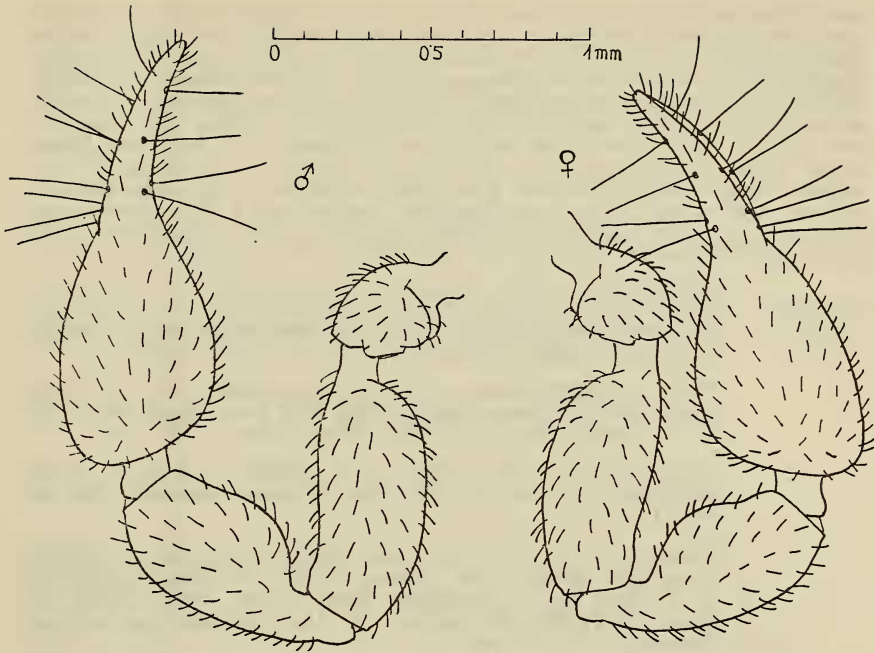


Fig. 3. *Sundochernes guanophilus*, nov. spec., pedipalp of male and female.

flatter and more rounded, the vestitural bristles much longer, and the legs more slender.

Protochelifer cavernarum sp. nov.

(Fig. 4).

Carapace and pedipalps intense reddish brown, abdominal tergites yellowish brown. Integument, the palpal hand inclusive, very densely granulate. Dorsal vestitural bristles of the body dentate and slightly clavate distally, those of the pedipalps dentate only, the medial bristles of the latter somewhat longer and thicker than the lateral ones. Carapace nearly 1.4 times longer than broad across the middle, without bigger granulae; both transverse furrows very distinct, the sub-basal one broader and flatter than the sharply incised anterior furrow, and from the latter at least twice as far as from the posterior border; posterior angles simple also in the male. Eyes normally developed. All the abdominal tergites divided, but the first of the male undivided; posterior angles also simple in the male. Half tergites mostly with 7 posterior border bristles and 1 lateral border bristle, but without discal or median border bristles. Ultimate tergite with 1 moderately long tactile bristle near the middle of each half tergite. Ultimate sternite with a pair of tactile bristles in the same position; 10th sternite with 2 longer bristles closer to the median line. Palm of chelicerae with 5 bristles. Galea nearly a simple awl-shape in the male, with small apical branches in the female. Galeal bristle reaching the tip of the galea in the male, almost so in the female (right galeal bristle of the male holotype teratologically duplicate). Pedipalps very slender. Trochanteral humps rounded. Femur shortly

and rather indistinctly pedicellate, 6.6 times, tibia 5 times, longer than broad, very shortly pedicellate, both joints broadest distally; hand very narrow, cylindrical, 2.9 times, chela with pedicel 5.6 times, without pedicel 5.3 times, longer than broad. Fingers as long as hand with pedicel, densely and bluntly toothed. The tactile seta *ist* almost opposite *est*, *it* subapically; the tactile setae *t* and *st* of the movable finger approximate each other. Legs long and very slender. Hind coxae of the male scarcely excavate, with flat apical hump, more densely setose around the opening of the small and simple coxal sacs, without other significant features. Fore tibiae, especially in the male, distinctly curved. Fore tarsus of the male long and slender, but a little shorter than tibia, not specialized. Subterminal bristles and claws simple. Ramshorn organs very small and reduced.

Body: length ♂ 2.8-3 mm.; ♀ 3-3.2 mm.

Carapace: length ♂, ♀ 1.10 mm.; breadth across the middle 0.80 mm.; behind 0.90 mm.

Pedipalps: length femur, ♂, ♀ 1.52 mm.; breadth femur 0.23 mm.; length tibia 1.37 mm.; breadth tibia 0.28 mm.; length hand 1.12 mm.; breadth hand 0.38 mm.; length fingers 1.08 mm.

Syntypes. 3 ♂, 2 ♀, Murder Cave, Cliefden, N.S.W., in guano 19.II.1966, B. Dew leg. (S. Aust. Museum, Adelaide, No. Ar 167-71).

Paratypes. 3 ♂, 2 ♀ from the same locality (Mus. Vienna); 2 nymphs, Belfry Cave, Timor, N.S.W., in guano, 16.V.1964; G. S. Hunt leg.; 1 tritonymph, Timor Caves, Timor, N.S.W., in guano, 13.XI.1965, B. Dew leg. (S. Aust. Museum, Adelaide and Australian Mus., Sydney).

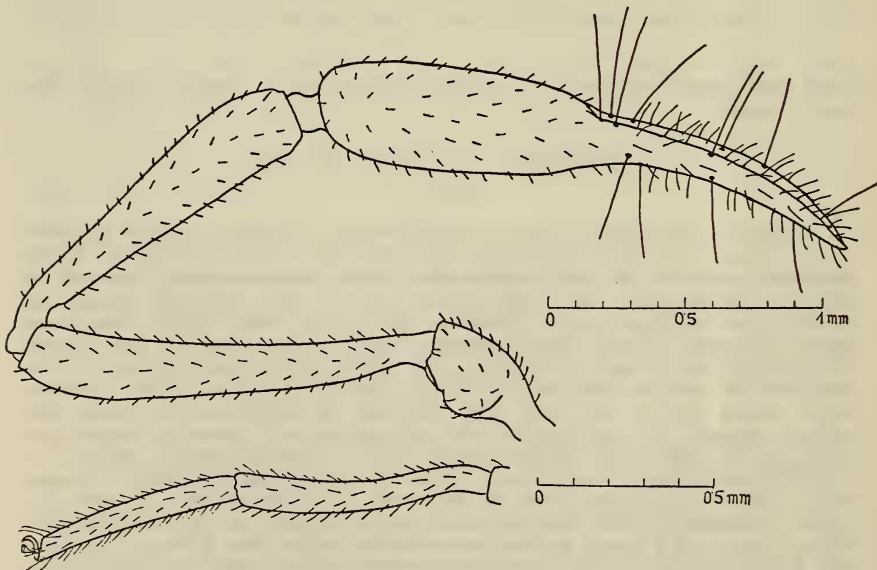


Fig. 4. *Protochelifer cavernarum* nov. spec., left pedipalp of female and tibia and tarsus of fore leg of male.

Comments—The new species is easily recognizable by the very slender pedipalps and the narrow palpal hand. It is related to *P. australis* (Tubb) but has the pedipalps longer, the abdominal tergites with fewer bristles, the hind corners of the anterior abdominal tergites of the male not prolonged, and all the tergal bristles clavate and dentate. It is the first known cavernicolous species of the genus *Protochelifer*, which is distributed in Australia and New Zealand.

References

- Beier, M., 1966.—On the Pseudoscorpionidea of Australia. *Aust. J. Zool.* 14: 275-303.
- Chamberlin, J., 1962.—New and little known False Scorpions, principally from caves, belonging to the families Chthoniidae and Neobisiidae. *Bull. Amer. Mus. Nat. Hist.* 123: 301-352.
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